

Notice of Allowability

Application No.

10/632,042

Applicant(s)

DAMERA-VENKATA ET AL.

Examiner

Vincent E. Kovalick

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Applicant's amendment dated 6/11/07.
2. ☒ The allowed claim(s) is/are 1-18 and 20-24 (re-numbered 1-23).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 6/11/07
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to Applicant's Amendment, dated June 11, 2007, in response to USPTO Office Action dated March 129, 2007.

The cancellation of claim 19; the amendments to claims 1-3, 18, 20, and 22-23 and the merit of Applicant's remarks are sufficient to place the application in a condition for allowance as indicated hereinbelow.

Allowable Subject Matter

2. Claims 1-18 and 20-24 are allowed.

3. The following is an examiner's statement of reasons for allowance:

Relative to claim 1, the major difference between the teachings of the prior art of record (Lewis, (USP 6,040,812) ; Gibbon, (WO 01/69942 A12) and Queiroz et al., (Pub. No. US 2001/0000711 A1) and that of the instant invention is that said prior art of record **does not teach** a method of displaying an image with the method comprising: receiving image data for the image at a first resolution; generating a first sub-frame and a second sub-frame based on combinations of pixel values from the image data, the first and second sub-frames having a second resolution which matches the display device and each have an area equal to the image data; and controlling an image shifter to allow for alternating between displaying the first sub-frame in a first position and displaying the second sub-frame in a second position spatially offset from the first position on the display device.

Regarding claim 2, the major difference between the teachings of the said prior art of record and that of the instant invention is that said prior art of record **does not teach** the method steps of alternating between displaying the first sub-frame in a first position and displaying the second sub-frame in a second position spatially offset from the first position; generating a third sub-frame and a fourth sub-frame based on combinations of pixel values from the image data; and wherein alternating between displaying the first sub-frame and displaying the second sub-frame further includes alternating between

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displaying the first sub-frame in the first position, displaying the second sub-frame in the second position, displaying the third sub-frame in a third position spatially offset from the first position and the second position, and displaying the fourth sub-frame in a fourth position spatially offset from the first position, the second position, and the third position.

Regarding claim 3, the major difference between the teachings of the said prior art of record and that of the instant invention is that said prior art of record **does not teach** the method comprising: receiving image data for the image; generating a first sub-frame and a second sub-frame based on combinations of pixel values from the image data, wherein the first and the second sub-frames each include a plurality of pixels, assigning a value to each pixel in the first and the second sub-frames based on a weighted sum of a plurality of pixel values from the image data; and alternating between displaying the first sub-frame in a first position and displaying the second sub-frame in a second position spatially offset from the first position.

Relative to claim 13, the major difference between the teachings of the said prior art of record and that of the instant invention is that said prior art of record **does not teach** a system for displaying an image, the system comprising: a buffer configured to receive image data for the image, the image data including a plurality of blocks of pixels; an image processing unit configured to define first and second sub-frames, the first and the second sub-frames each including a plurality of pixels, each pixel in the first and the second sub-frames corresponding to one of the blocks, and wherein the image processing unit is configured to assign a value to each pixel in the first and the second sub-frames based on a value of at least one pixel in a corresponding block multiplied by at least one weight value; and a display device adapted to alternately display the first sub-frame in a first position and the second sub-frame in a second position spatially offset from the first position.

Regarding claim 18, the major difference between the teachings of the said prior art of record and that of the instant invention is that said prior art of record **does not teach** a system for generating sub-frames for display at spatially offset positions to generate the appearance of a higher resolution image, the system comprising: means for receiving a first image; means for identifying a plurality of blocks of pixels in the first image; and means for generating a plurality of sub-frames, wherein the first

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and second sub-frames each include a plurality of pixels, each pixel of the plurality of sub-frames assigned a value based on a weighted sum of combinations of the pixels in each identified block of pixels in the first image.

Relative to claim 20, the major difference between the teachings of the said prior art of record and that of the instant invention is that said prior art of record **does not teach** a system for generating sub-frames for display at spatially offset positions to generate the appearance of a higher resolution image, the system comprising: means for receiving a first image; means for identifying a plurality of blocks of pixels in the first image, wherein the combination of the pixels in each identified block comprise weighted sums of the pixels in each identified block and wherein each block comprises a 2x2 array of four pixels; and means for generating a plurality of sub-frames based on combinations of the pixels in each identified block of pixels.

Regarding claim 22, the major difference between the teachings of the said prior art of record and that of the instant invention is that said prior art of record **does not teach** a system for generating sub-frames for display at spatially offset positions to generate the appearance of a higher resolution image, the system comprising: means for receiving a first image; means for identifying a plurality of blocks of pixels in the first image; means for generating a plurality of sub-frames based on wherein the combinations are non-linear combinations of the pixels in each identified block of pixels.

Relative to claim 23, the major difference between the teachings of the said prior art of record and that of the instant invention is that said prior art of record **does not teach** a computer-readable medium encoded with computer-executable instructions for performing a method of generating sub-frames for display at spatially offset positions to generate the appearance of a higher resolution image, comprising: receiving a first high resolution image; identifying a plurality of sets of pixels in the first high resolution image; and generating a plurality of sub-frames, wherein each of the plurality of sub-frames each include a plurality of pixels, by assigning a value to each pixel in the plurality of sub-frames based on weighted sums of the pixels in each identified set of pixels in the first high resolution image.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Applicant's Remarks

4. Applicant's remarks relative to claims 1, 11, 18-19, 21 and 23 are rendered moot in light of the allowance of this case.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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| U. S. Patent No. | 5,987,136 | Schipper et al. |
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| Pub. No. | US 2004/0207592 | Ludden |
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| Pub. No. | US 2003/0058228 | Katoh et al. |
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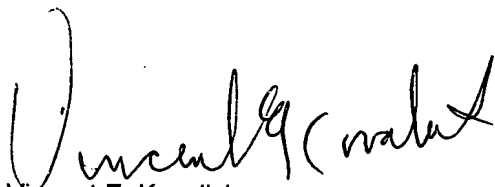
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To Respond

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent E. Kovalick whose telephone number is 571-272-7669. The examiner can normally be reached on Monday-Thursday 7:30- 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Vincent E. Kovalick
June 20, 2007


AMARE MENGISTU
SUPERVISORY PATENT EXAMINER